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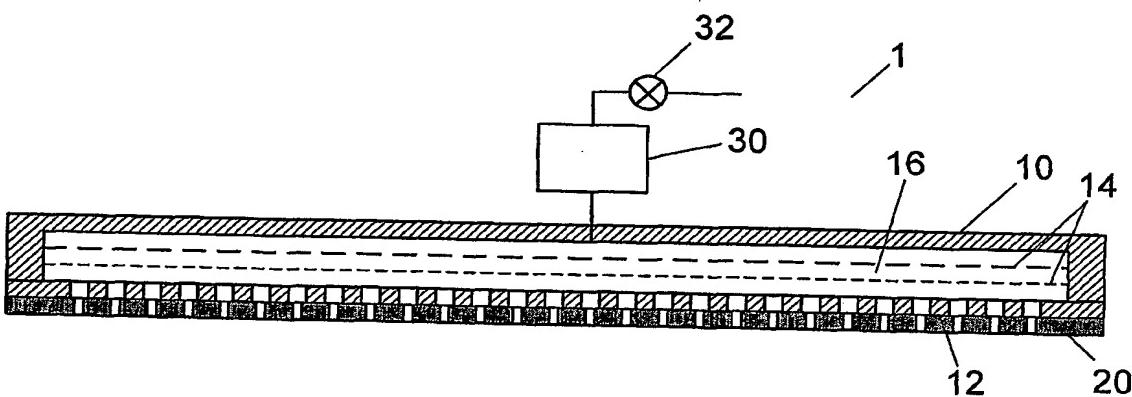
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(54) Title: METHOD AND APPARATUS FOR DETERMINING CONSUMABLE LIFETIME



(57) **Abstract:** A plasma processing device comprising a gas injection system is described, wherein the gas injection system comprises a gas injection assembly body, a consumable gas inject plate coupled to the gas injection assembly body, and a pressure sensor coupled to a gas injection plenum formed by the gas injection system body and the consumable gas inject plate. The gas injection system is configured to receive a process gas from at least one mass flow controller and distribute the process gas to the processing region within the plasma processing device, and the pressure sensor is configured to measure a gas injection pressure within the gas injection plenum. A controller, coupled to the pressure sensor, is configured to receive a signal from the pressure sensor and to determine a state of the consumable gas inject plate based upon the signal. A method of determining the state of the consumable gas inject plate comprises: measuring a change in the gas injection pressure associated with either a change in the process gas mass flow rate or the processing pressure; determining a response time for the change in pressure; and comparing the response time during erosion to a response time during no erosion.

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